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ABSTRACT

Recent investigations of marital interaction have concentrated on the process of communication while discussing issues of conflict within the relationship. Few studies have been designed to assess emotional communication among married couples. To determine emotional interaction by examining the overall distribution and sequencing of emotional behaviors, 42 couples were observed one month after the birth of their first child. Couples with very high adjustment emitted a greater proportion of approve/caring behaviors and a lesser proportion of aversive behaviors when compared to couples with moderate adjustment. Sequential analysis confirmed that empathic behavior had an excitatory effect on the subsequent probability of partner complaints; negatory behavior had an inhibitory effect. The findings indicate patterns of behavior that suggest functional reinforcement and punishment. (Author/JAC)

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Patterns of Support for Specificity of Marital Emotional Communication

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Patterns for Support for Specificity of Marital Emotional Communication

Recent investigations of marital interaction have concentrated on the process of communication of couples while discussing issues of conflict within their relationship. These problem-solving interactions have shown differences between distressed and nondistressed couples in the likelihood of emitting positive behaviors (Gottman, 1979; Billings, 1979; Margolin & Wampold, 1981), negative behaviors (Gottman, 1979; Billings, 1979) and in the sequencing of negative behaviors. Distressed couples have been shown to be significantly more likely than non-distressed couples to respond negatively after negative behavior from their spouse (Gottman, 1979; Billings, 1979; Mettetal & Gottman, 1980; Margolin & Wampold, 1981). Although assessments of marital behavior during less conflictual tasks have permitted some generalizability for these findings (Vincent, Weiss & Birchler, 1975; Gottman, 1980), few studies have been designed specifically to assess emotional communication in couples.

Social learning formulations of marriage have acknowledged the importance of skills in both emotional communication and problem-solving (Weiss & Margolin, 1977; Jacobson & Margolin, 1979). Weiss (1978, 1980)

has speculated that skills in clear expression and support/understanding are relationship accomplishments which usually precede the development of good problem-solving skills. Couple intervention programs have also assumed the value of teaching skills in clear emotional expression and active listening (Van Zoost, 1973; Ely, Guerney & Stover, 1973; D'Augelli, et al., 1974; Rappaport, 1976; Weiss & Perry, 1979), yet little empirical evidence exists concerning the emotional communication process in married couples.

Most of our assumptions about the role of emotional expression and support in human relationships originate not from the study of marital interaction, but from models of psychotherapeutic interaction. The client's open expression of feeling and the corresponding empathic response from the therapist are considered essential ingredients in practically all formulations of psychotherapy (Truax & Carkhuff, 1967; Lazarus, 1971; Wolberg, 1977). Because investigations of psychotherapeutic interaction have not employed analyses of behavior sequences, the question of whether empathy temporally precedes increases in the probability of emotional expression has not been answered (Gottman & Markman, 1978).

The primary purpose of the present investigation was to provide a description of emotional interaction in married couples by examining the overall distribution and sequencing of emotional behaviors. As Gottman, Markman and Notarius (1977) pointed out, this first stage of description is often neglected in the process of scientific validation. One way to

validate the function of a behavior within interactions is to examine its effect on the probability of subsequent behaviors. In these lag sequential analyses (Bakeman, 1978; Sackett, 1979), one behavior is selected as a criterion and conditional probabilities of other matching behaviors following the criterion are calculated. The observed proportion of a particular matching behavior at each lag is compared to its base rate probability. Functional analyses of sequences of problem-solving behaviors, for example, have shown that behaviors assumed to be aversive increase the subsequent probability of similar partner behaviors (Gottman, 1979; Billings, 1979; Margolin & Wampold, 1981), and decrease the subsequent probability of positive spousal behavior (Margolin & Wampold, 1981).

As part of a larger study, couples in the current investigation were videotaped while discussing four issues. Two issues, one each for husband and wife, were specifically designed to elicit emotional communications. Each partner identified an instance outside of the marriage in which they had been emotionally upset. Their task was to talk over this issue with their spouse. Videotapes of the discussion were behaviorally coded by trained observers. Although the primary purpose of the study was to describe the process of communication within couples, there was also an interest in whether or not couples who differed in their marital adjustment, would exhibit different patterns of emotion. To examine this question couples were classified according to their scores on self-report measures of marital satisfaction and

adjustment. The distribution of adjustment scores was divided into thirds yielding three groups of couples. Because few couples fell within a clinically distressed range couples were identified as having either moderate, high or very high marital adjustment.

Three hypotheses were addressed: First, supportive behaviors are expected to increase the subsequent frequency of emotional expression. On the contrary, negative behaviors are expected to decrease the subsequent frequency of emotional behaviors. Second, couples with very high adjustment are expected to exhibit a higher proportion of behaviors involving emotional expression and support and a lower proportion of negative behaviors compared to couples with moderate adjustment. Third, couples with very high adjustment are expected to respond with a high probability of supportive behavior and a low probability of negative behavior following their spouses' expression of emotion. Couples with moderate adjustment, however, are expected to respond with a relatively low probability of support and a relatively high probability of negative behavior following emotional expression from their spouses.

Method

Subjects

Volunteer couples were recruited from La Maze classes to participate in a larger investigation of couples expecting their first children. Couples were asked to participate in "an intensive study of couples from late pregnancy through the first two months postnatally." Specific feedback regarding their infant based on a hospital visit and home visit was offered, as well as the opportunity to learn more about their family. It was stressed that no counseling would be offered. All couples were paid $10 for their participation and informed consent was obtained from all volunteers.

Subjects were initially screened to ensure that this would be a first child for the couple, that the pregnancy was in the third trimester, and that the mother was free from serious medical complications. Telephone contact was maintained through the last weeks of pregnancy and couples were instructed to contact the experimenter as soon as the baby was born. As a back up, admissions to the hospital were also monitored. Parents of infants with Apgar scores below seven, suspected or demonstrated anoxia, congenital defects, or other serious medical complications or illnesses were excluded from the study.

Fifty-eight couples originally expressed interest in participation but sixteen couples did not complete the data collection. Couples were excluded due to an emergence of mother or infant medical problems (six couples), loss of interest (seven couples) and incomplete data (three couples). Forty-two couples were included in the data analysis.

Couples were classified using a composite score based on three marital satisfaction indices, the Locke-Wallace Marital Adjustment Scale (MAS: Locke & Wallace, 1959) and the two subscale scores of the Area of Change Questionnaire (Weiss, Hops & Patterson, 1973): (a) desired change (ACQD) and (b) perceptual accuracy (ACQP). Couple adjustment scores were computed using z-score transformations of each score in the following formula:

$$\text{Adjustment} = \overline{MAS}_z + \overline{ACQD}_z + \overline{ACQP}_z.$$

The distribution of scores was divided into thirds to form three groups of couples.

Inspection of scores on the MAS ($\bar{X}$=119.7, S.D.=7.8) revealed that all couple averages exceeded the adjustment score of 100 used in previous studies to distinguish between distressed and nondistressed couples. The ACQ ($\bar{X}$=43.2, S.D.=15.1) showed a majority of couples falling in the nondistressed range, although several couples exceeded the usual cutoff (45) for marital distress. Given the general bias of the sample toward a nondistressed range, the three groups of couples were designated as Moderate Adjustment, High Adjustment and Very High Adjustment, based on their relative scores on the composite index.

Spouses averaged a score of 20.9 on the Hollingshead-Redlich two-factor index of socioeconomic status, had an average age of 28.5 years, were married 4.7 years for the 1.2 time, and had 16.0 years of education. A series of univariate F tests revealed no differences between the three groups of couples formed in regard to all of the demographic variables (F=1.55, 0.87, 1.08, 2.47 respectively) except

education ($F=8.68$, $p < .001$). Couples with very high adjustment averaged almost two years more education than couples in either of the other two groups.

Procedure

Couples were phoned by a research assistant two months prior to the projected due date of the infant. The Brazelton Neonatal Behavioral Assessment Scale (Brazelton, 1973) was administered to infants at three and fifteen days postnatally by another project member. At thirty and sixty days postnatally, the whole family visited the laboratory. The data for the current study were obtained from the thirty-day assessment. The project staff member who had previously talked with the subjects by phone served as experimenter.

During the assessment session, each spouse independently completed a battery of self-report questionnaires and was videotaped in separate face-to-face interactions with the infant. The couples also participated in two types of marital interaction tasks.

For the marital interaction tasks, wife and husband were interviewed individually in order to elicit information about specific situations in which a) they had desired change in some aspect of their partner's behavior; and, b) they were upset about something outside of the relationship and wished to discuss it with their partner. The first situation (problem-solving) was not used in the current investigation. Of concern here are the situations designed to elicit samples of behavior involved in the expression and support of emotional content.

In eliciting the issues, the experimenter stressed that all couples have to deal with issues like these and that the investigators were interested in obtaining a sample of how the two of them as a couple talked about these everyday occurences. The experimenter tried to elicit two or three examples of each type of issue for each spouse and picked the ones which appeared most current and/or salient. Index cards were then prepared for four of the issues. For each issue a brief synposis of the situation was provided. This synopsis was then used as a lead-in to the discussion. For example:

> Two of your employees didn't show up for work today. They left no indication of the work they were supposed to complete Friday, so you had to cover for them when your clients came in. When you get home you still feel hassled, so when you see your husband in the living room you say. . .

Prior to each discussion, the initiator was instructed to look at the cue card, and to recreate the situation "as if it were happening right now for the very first time." The couples were instructed to simply talk about each issue for five minutes. After the couple talked for five minutes, the experimenter signaled that it was time to move on to the next issue. The order of initiator (husband or wife) and the type of situation was counterbalanced across couples.

Measures

The dependent measures were derived from a complex behavioral coding system, the Marital Coding system (MCS), developed as a revision of the Marital Interaction Coding System (Hops, Wills, Patterson & Weiss, 1972). Although a few categories were similar to the ones in the Marital Interaction Coding System, the MICS had relatively few

categories dealing with the range of content and subtlety of affect found in the discussion of emotional issues, thus potentially collapsing across positive, neutral and negative affect. Furthermore, some MICS categories were very general, and accounted for most of the behavior which occurred between spouses. In order to address these problems as well as improve the overall quality of the measure, three types of changes were incorporated in the MCS: (1) many definitions were rewritten so that they would be conditional upon a positive or negative tone of voice or other nonverbal cues; (2) many definitions were revised to reflect more clearly differing levels of content specificity; and (3) affect clearly relating to self, spouse or outsider were all differentiated.

The basic unit of observation of the MCS was a verbal response, homogenous in content, without considering its duration or arbitrary syntactical properties. Sometimes a sentence would represent one codable unit, but in other cases a sentence would contain two or more codable units. Sometimes a sentence would be only part of a larger behavior unit containing several sentences. This type of unitization of behavior is similar to the "thought units" described by Weiss, et al. (1973) and Gottman (1979), where the immediate repetition of the same behavior by the same person is not coded. Written transcripts were prepared from the videotapes in advance. The coders' task consisted of a) discriminating behavior units by attending to changes in content or affect, and b) assigning one of the 25 behavior codes to each behavior.

Videotape recordings of interactions were coded by persons who were blind as to the hypotheses of the study as well as to which adjustment group (moderate, high or very high) the couple had been assigned. Coders watched the videotapes in a predetermined random order while following the dialogue on a written transcript. To ensure accuracy of judgment, coders were required to play each interaction at least twice, starting, stopping and rewinding as needed.

Videotapes were initially coded by one person and then coded by two more coders who functioned independently of each other, but had access to the original coded transcript. Reliability between the latter two coders was then computed separately for each code in each interaction. Differences in unitization as well as in which code was assigned to a given behavior were counted as disagreements.

Coders were fourteen undergraduate students who underwent an initial 26-hour training course on the use of the MCS. For their participation, observers received university credit in an independent study course. Two-hour booster training sessions were conducted weekly for the ten weeks of actual coding. These sessions consisted of computing reliability against selected criterion coded transcripts, as well as coding in a group or alone with a graduate student trainer.

For each of the two interactions either the wife or husband was alternately designated the initiator of the task while their partner was designated as respondent. The initiator's task was to begin the interaction around the issue that had previously been identified in the interview. Initiator and respondent behaviors were considered

separately in the analyses. The spouse who initiated the issue was expected to exhibit higher rates of expressive behavior whereas the respondent was expected to exhibit higher rates of supportive behavior. These assumptions were confirmed by the data. Five of the 25 MCS codes were selected on an a priori basis for the present study. An additional negative dimension was derived which contained nine low base rate codes.

Three behaviors were selected as indicative of emotional expression of the initiator. Two were types of complaints, defined here as expressions of dissatisfaction regarding something outside of the marital relationship. They were usually accompanied by negative affect. A Focused Complaint required the speaker to state the person, behavior and situation being complained about (e.g., "My boss was really sarcastic this morning when he asked me what time I came in."); whereas a Vague Complaint may have only some or none of these referents identified (e.g., "Work is really getting me down."). It was assumed that the emission of a Focused Complaint represented more effective communication than a Vague Complaint because Focused Complaints are usually less ambiguous and provide more cues to spouses concerning the nature of their partner's upset. Criticism of the spouse was excluded from either type of complaint, and both were frequently delivered in a whiny manner. The third type of emotional expression was State Label which was coded for any expression of emotion unambiguously referring to self (e.g., "I feel happy.")

State Label was also selected as a respondent behavior of interest because it clearly represented an expression of feeling. Two other behaviors were selected from the MCS because of their similarity to behaviors rated in psychotherapy research (Truax & Carkhuff, 1967) and their identification by Guerney (1976) as important for couples in situations requiring emotional support. The first, Approve/Caring, was coded for statements indicating either approval of the spouse's actions, statements or attributes; or caring statements expressing concern about a spouse's bad feelings (e.g., "I'm sorry you had a bad dream."). Legitimize/Empathize was coded for statements acknowledging the factual or emotional basis for the partner's expressed feelings. They usually implied that the partner had every right to react the way they did (e.g., "I know my mother can be really tactless."). Positive affect was often quite apparent in both Legitimize/Empathize and Approve/Caring.

For a dimension reflecting negative or aversive behaviors, ten codes were originally selected. Most of these definitions were not only written to be aversive, but are similar to coding definitions that have been found to distinguish between distressed and nondistressed couples (e.g., Birchler, Weiss & Vincent, 1975). Process Comment, although not originally intended as negative, was included because of its more frequent occurrence in the interactions of distressed couples compared to nondistressed couples in a previous investigation (Gottman, 1979). Because we wished to aggregate negative behaviors into a single dimension, only those behaviors which were predominantly correlated with the other behaviors were retained. Only one of ten behaviors (Vague

Negative Suggestion) was excluded based on this criterion. Separate scores for each of the other nine behaviors were added together and analyzed as a single negative dimension. The behaviors chosen for the Negative Behavior dimension were Back Pat, Criticize, Defend/Justify, Invalidate, Mind Read, Process Comment, Put Down, Sarcasm/Tease, and Specific Negative Suggestion.

Results

Reliability of the Coding System

Thirty-nine interactions were randomly selected from the total 84 support/understanding interactions in order to assess coder agreement. Following the procedure outlined by Gottman (1979), Kappa was computed on the sequential data for each of the five behavior codes and the Negative Behavior Dimension to assess point-by-point reliability. Kappa was equal to .59 (Approve/Caring), .61 (Negative Behavior), .62 (Vague Complaint), .70 (Focused Complaint), .77 (State Label) and .82 (Legitimize/Empathize). These values provide an index as to the proportion of agreement of the two judge coders after chance agreement has been removed from consideration. All errors of commission and omission by both coders were included in the computations. This is a considerably more conservative procedure than preselecting one coder as the criterion for computing reliability. Except for one category (Approve/Caring), these values meet or exceed the reliability standard of .60 generally accepted for observational sequential data (Hartman, 1977; Mitchell, 1979).

Overview of Sequential Analyses

For each of the two five-minute interactions, one spouse was designated as initiator of the issue, and the other spouse as respondent, and then spouses reversed roles. To control for differences across couples in behavioral output, proportion scores were computed by dividing the frequency of a particular initiator or respondent behavior by the total number of behaviors for that couple. These proportions are unconditional probabilities employed in the sequential analyses.

The valence of supportive and aversive behaviors can be functionally determined by looking at the nature of the behaviors which precede them and the probabilities of behaviors which follow them at subsequent lags. Behavior streams may be suggestive of one of four functional patterns. A behavior which is emitted contingently upon another behavior and has an excitatory effect on the subsequent probability of that behavior exemplifies positive reinforcement. Contingency with an inhibitory effect suggests a punishment function. Behavior sequences suggestive of extinction and negative reinforcement are also possible, but were not examined.

The analysis of behavior sequences was performed using LAGS, a computer program developed by Sackett (1979). This program computes conditional probabilities for any matching behavior selected after a designated criterion behavior. The behaviors which immediately follow the criterion are referred to as lag one, the next as lag two, and so on. The conditional probabilities of each lag are tested against the unconditional probabilities by a z-score approximation to the binomial

distribution. The direction of the z-score determines whether the criterion has a relatively excitatory or inhibitory effect on the probability of behaviors following it whereas the magnitude of the z-score determines whether or not one can reject the null hypothesis. Z-scores greater than ±1.96 occur by chance less than five percent of the time.

In order to choose which behaviors should be looked at sequentially, Sackett (1979) has suggested that each behavior considered should have an unconditional probability of at least .05 - .10. In order to include most of the behaviors of interest, the actual cutoff for inclusion used in the sequential analyses was .046. Each behavior considered actually occurred 204 times or more in the 84 coded interactions. Those behaviors originally planned but excluded from further analyses because of low base rates were Initiator State Label (.030), Respondent State Label (.005) and Respondent Approve/Caring (.010).

First we examined the effects of Legitimize/Empathize and Negative Behavior on the subsequent probabilities of partner emission of Focused Complaint and Vague Complaint for all couples as a group. Second the emission of Legitimize/Empathize and Negative Behavior contingent upon partner emission of Focused Complaint or Vague Complaint was examined for couples with moderate, high and very high marital adjustment. Finally, supplementary analyses were conducted to explore the consequences of Legitimize/Empathize and Negative Behavior within each of the three groups of couples.

Behavior Following Empathic and Aversive Behavior

The probability of both Initiator Focused Complaint and Initiator Vague Complaint following a Respondent Legitimize/Empathize are presented in Table 1. At the first three lags Focused Complaint increased significantly over its unconditional probabilities ($z=5.60$, 5.16, 3.82 respectively). Vague Complaint also tended to increase at all early lags over base rate probabilities but only at lag two ($z=2.26$) was this increase statistically significant. At later lags, the conditional probability of Focused Complaint showed a mixed pattern. The conditional probability of Focused Complaint was significantly less than its unconditional probability at lag four ($z=-3.65$), and tended to be greater at lag six ($z=1.28$). At later lags the conditional probabilities of Vague Complaints given Legitimize/Empathize were significantly inhibited at lags four and six ($z=-7.76$, -7.65 respectively), and tended to be inhibited at lag five ($z=-1.60$). Visual inspection of the conditional probabilities show that Focused Complaint appears to be more likely than Vague Complaint at every lag following Legitimize/Empathize.

The probabilities of Initiator Focused Complaint and Initiator Vague Complaint following a Respondent Negative Behavior are given in Table 2. As expected, negative z-values indicate that following Negative Behavior, a Focused Complaint was less likely at all six lags ($z=-1.03$, -2.60, -6.54, -5.03, -4.82, -9.95 respectively). Only at lag one was this difference nonsignificant. The probability of Vague Complaint was also significantly inhibited at lags two, four, five and six following

Legitimize/Empathize ($z=-11.44, -4.76, -7.22, -8.35$), was increased significantly at lag three ($z=2.83$), and tended to increase at lag one ($z=1.72$).

Group Differences in Responding to Complaints

Before undertaking sequential analyses of behavior samples from each of the three groups of couples, group differences in the unconditional probabilities of behaviors were examined. Separate one-way analyses of variance were done on each of the six behaviors used as dependent variables. Prior to analysis, arcsine $\sqrt{x}$ transformations were performed on the proportions of behaviors from couples with moderate, high and very high adjustment. There were no differences in the proportions of behavior emitted except for Approve/Caring behavior, which was positively related to adjustment ($F = 4.88$, $p < .05$) and Negative Behavior which was negatively related to adjustment ($F = 4.42$, $p < .05$). In addition, the proportion of Legitimize/Empathize behavior unexpectedly showed a curvilinear relationship with adjustment. Couples with high adjustment emitted the highest proportion of empathic behaviors ($F = 21.85$, $p < .001$).

Patterns of contingent emission of empathic and aversive behaviors were explored next. Data from couples with moderate, high and very high adjustment were analyzed separately. Each of these analyses employed roughly one-third the number of behavioral codes employed in the previous analyses. When considering low base rate behaviors within samples as small as these, the conditional probabilities are not normally distributed as assumed by the binomial test of significance.

To partially offset this, a more stringent criterion of significance was adopted. Only z-scores of 2.58 or greater ($p<.01$) were considered statistically significant when looking at patterns from each of the three groups of couples.

Four possible sequences of behaviors were examined: (1) Focused Complaint followed by Legitimize/Empathize; (2) Vague Complaint followed by Legitimize/Empathize; (3) Focused Complaint followed by Negative Behavior; and (4) Vague Complaint followed by Negative Behavior. Couples with very high adjustment were expected to respond with an increased probability of empathy following complaints. No deviation from base rate probabilities were predicted for negative responses. By contrast, couples with moderate adjustment were expected to follow complaints with little or no increse in empathic responses over base rate probability, and respond with an increased probability of aversive behavior following complaints for couples with high adjustment were expected to exhibit intermediate patterns, and generally did except when noted. The lag one conditional and unconditional probabilities for the behavior streams from each of the three groups of fourteen couples are presented in Table 3.

In all three groups of couples both types of complaints were followed by empathy far more often than the unconditional probability of empathy. There were no apparent differences between the three groups of couples unless specificity of complaint was also considered. The increase of empathy in couples with very high adjustment was most pronounced for sequences beginning with Focused Complaint (conditional

p=.190, z=39.98), while the z-score showed a lower increase in empathy following Vague Complaint (p=.103, z=18.79). Couples with moderate adjustment showed the greatest increase in empathy following Vague Complaint, (p=.162, z=22.73) and evidenced a smaller increase in empathy following Focused Complaint (p=.088, z=8.83).

The probabilities of negative consequences to complaints were examined next. It was predicted that couples in the very high adjustment group would emit a low probability of Negative Behavior immediately following complaints, whereas couples in the moderate adjustment group were expected to respond with a high probability of Negative Behavior after complaints. These patterns were confirmed when examining either type of complaint. In couples with very high adjustment, the probability of Negative Behavior given a Vague Complaint did not appear to differ from the base rate of Negative Behavior (p=.052, z=0.91), whereas Focused Complaint appeared to suppress the emission of Negative Behavior (p=.024, z=-3.53). Thus, quite low rates of Negative Behavior were found in the very high adjustment group after either type of complaint, and Focused Complaints in particular were extremely unlikely to be followed by a Negative Behavior. As hypothesized, couples in the moderate adjustment group emitted relatively more Negative Behavior following both Focused Complaint (p=.147, z=9.03) and Vague Complaint (p=.108, z=3.62) than they did at other times during the interaction. Thus, the moderate group appeared to emit Negative Behavior contingently following both types of complaint, but especially after Focused Complaint.

Supplementary Analyses

Sequential analyses of the behavioral consequences of empathic and aversive behavior within each of the three levels of couple adjustment were also undertaken. Although patterns of complaining following empathic and aversive behavior were already examined for couples in general, the differing contingencies for emission of empathic and aversive behavior within each group of couples, suggested the possibility that the subsequent probabilities of complaints would also differ according to couple adjustment. For example, couples with very high adjustment were found to empathize more contingently with a partner Focused Complaint compared to a Vague Complaint. We might then expect that these couples would show a greater increase in the probability of Focused Complaint relative to Vague Complaint after empathy. Conversely, couples with moderate adjustment empathized most contingently with Vague Complaints. We would expect them to show a greater increase in the subsequent probability of Vague Complaints following empathy.

Lag one probabilities of complaints following empathic or aversive behavior for each group of couples are given in Table 4. Couples with very high adjustment responded to Legitimize/Empathize with a significantly greater probability of Focused Complaint compared to baseline probability ($p=.061$, $z=6.58$) and tended to decrease their probability of emitting Vague Complaint below baseline ($p=.030$, $z=-2.33$). For couples with moderate adjustment, the probability of Vague Complaint following Legitimize/Empathize increased significantly

above baseline (p=.073, z=3.07), whereas the subsequent probability of Focused Complaint appeared to be near baseline (p=.057, z=-0.58). No effects were predicted for couples with high adjustment. Thus, empathy did appear to have a reinforcing effect on the probability of spousal complaints. This effect, however, depended on both the level of couple adjustment and the specificity of complaint.

Conditional and unconditional probabilities of behaviors following Negative Behavior for each group of couples were examined next. For couples with very high adjustment, Negative Behavior inhibited the subsequent probability of both Focused Complaint (p=.017, z=-3.01) and Vague Complaint (p=0, z=-8.04) below their respective baseline probabilities. For couples with moderate adjustment the probability of Focused Complaint given Negative Behavior was significantly inhibited below baseline (p=.031, z=-3.62), whereas Vague Complaint appeared unaffected (p=.063, z=-0.97). Although no effects were predicted for couples with high adjustment, Negative Behavior unexpectedly increased the probabilities of both Focused Complaint (p=.081, z=3.12) and Vague Complaint (p=.093, z=5.59) above their respective unconditional probabilities. Thus, the function of aversive behavior on subsequent partner behavior probabilities also varied with the degree of couple adjustment.

Discussion

The results of the present study may be summarized as follows:

1. For most of the six behaviors following empathy, there were significant increases over base rate probabilities in the proportions of

spousal complaints which specified person, place and situation. There also tended to be an increase in nonspecific complaints at first, but after several behaviors nonspecific complaints were inhibited.

2. Following aversive behavior, there were significant decreases in the subsequent rates of nonspecific complaints for most of the next six behaviors. Specific complaints were inhibited at each of the six behaviors following aversive behavior.

3. Couples with very high adjustment emitted a greater proportion of approval and caring behaviors and a lesser proportion of negative behaviors when compared to couples with moderate adjustment. Unexpectedly, couples with high adjustment emitted greater proportions of empathy than the two extreme groups. No signficant differences between groups were found in the proportions of complaints or affective statements.

4. All couples followed complaints with proportions of empathy significantly greater than base rate. When considering specificity of complaint however, couples with moderate, high and very high adjustment showed varying levels of contingency between complaints and empathy. Couples with moderate adjustment evidenced their greatest increase in empathy following nonspecific complaints, while couples with very high adjustment showed their greatest increase in empathy after specific complaints.

5. Only moderately adjusted couples followed both types of complaints with increses in the proportion of negative behavior. Very highly adjusted couples however, showed no increases in negative behavior rates

following complaints but did evidence inhibition of negative behavior following specific complaints.

6. Exploratory analyses of spousal behavior following empathic and aversive behavior appeared to differentiate the three groups of couples. Couples with moderate adjustment showed increases in the probability of nonspecific complaints after empathy, whereas couples with very high adjustment showed increases in specific complaints after empathy. Couples with moderate adjustment showed inhibited rates of specific complaints after aversive behavior whereas couples with very high adjustment showed inhibited rates of both types of complaints. Couples with high adjustment showed no changes in complaint probabilities following empathy, but unexpectedly appeared to increase both types of complaints after their partner emitted negative behavior.

Findings from the current study support the applicability of the empathy model of self-disclosure (Truax & Carkhuff, 1967) to the marital relationship. The combined data from all couples showed that following empathy, spousal complaints were more likely for a least three behaviors. Empathy not only temporally preceded higher than base rate probabilities of spousal complaints, but appeared to differentially affect the two types of complaints. Although the base rate probability of nonspecific complaints appeared to be slightly higher than the base rate probability of specific complaints, after empathy, spouses appeared to be more likely to specify the person, place and situation with which they were upset. This suggests that empathy helps partners to delineate their complaint. The eventual inhibition of nonspecific complaints

after several behaviors (lags 4-6) is also consistent with this interpretation.

Examination of behavior following those behaviors thought to be aversive shows a pattern opposite to that shown with behavior following empathy. Aversive behavior had an inhibitory effect on the subsequent probability of both specific complaints and, to a lesser extent, nonspecific complaints. Both empathic and aversive behavior appeared to show more consistent functinal repationships to well delineated expressions of nonmarital dissatisfaction.

Base rate differences in aversive behavior between couples varying in their marital adjustment are similar to the results of previous studies comparing problem-solving behavior in distressed and nondistressed couples (Vincent, et al., 1975; Gottman, 1979; Billings, 1979). Although the range of couples used in the current study was more restricted than in previous studies, the relatively high proportions of negative behavior in less well adjusted couples is a finding which appears to generalize from interactions around marital conflict to discussions of situations which do not directly involve the spouse.

Approval and caring behaviors were found in greater proportions for couples with very high adjustment when compared to couples with moderate adjustment. These findings seem to replicate similar differences in positive behavior obtained in previous studies (Vincent, et al., 1975; Billings, 1979; Gottman, 1979; Margolin & Wampold, 1981). Contrary to expectation, couples in the high adjustment group emitted the greatest proportion of empathy behavior. Though couples with high adjustment

expressed positive sentiment predominantly through empathy, couples with very high adjustment emitted more equivalent proportions of approval or caring behaviors and empathy. Further study is needed to explore the differences between various supportive behaviors.

In the present study, moderately adjusted couples as a group were most likely to follow specific complaints from their partner with negative behavior. Although the reciprocal continuation of this pattern over several lags was not examined (as in Gottman, 1979; Billings, 1979), the findings suggest that contingent emission of aversive behavior after specific complaints functions to inhibit the probability of further expression of specific complaints in moderately adjusted couples. This pattern may reflect a coercive behavior change strategy (Patterson & Reid, 1970; Patterson, Weiss & Hops, 1976).

Differences in the probability of positive reciprocity between distressed and nondistressed couples have not been found in previous investigations of couples problem-solving, although there is evidence for some positive reciprocity in both groups (Gottman, 1979; Margolin & Wampold, 1981). Similarly, when ignoring specificity of complaint, there was no evidence for greater contingency of supportive behavior in any of the three groups of couples. Perhaps because few of the couples in this study were seriously distressed, all couples showed some skill in supporting their spouse's complaints.

Analyses of behavior streams from couples varying in their adjustment suggest that empathic and aversive behaviors may function as reinforcers and punishers respectively, but that these relationships

vary according to marital adjustment. In couples with very high adjustment, for example, empathy seemed to reinforce specific complaints since empathy was emitted contingently after specific complaints and also preceded increses in the subsequent probability of specific complaints. Couples with moderate adjustment, however, empathized more readily with nonspecific complaints and nonspecific complaints were similarly more likely to occur after empathy. Thus, although empathy was contingently administered to all complaints in all groups, it appeared to function as a reinforcer relative to specific complaints in very highly adjusted couples and as a reinforcer of nonspecific complaints in moderately adjusted couples. Aversive behaviors appeared to qualify as punishers relative to specific complaints in the moderate adjustment group because they were emitted contingently and also inhibited the subsequent probability of specific complaints. Couples with very high adjustment, however, showed no patterns of behavior suggestive of punishment. Rather they showed a substantially decreased probability of negatives after specific complaints.

While the findings are suggestive of the applicability of positive reinforcement and punishment paradigms to marital interactions, several limitations of this study should be noted. Only chains of two behaviors have been examined. Occurrences of longer behavior chains have not been directly examined. For example in couples with very high adjustment it was found that empathy follows specific complaints more often than would be expected by knowledge of unconditional probabilities alone. Specific complaints also follow empathy more often than would be expected.

Although these findings taken together strongly suggest the sequence of specific complaint ⟶ empathy ⟶ specific complaint, this longer sequence may not have actually occurred in the data.

The educational level of couples represents a potential confound in this study. Couples with very high marital adjustment had also achieved a higher level of educational attainment than couples in the other groups. It is possible that higher education in itself accounts for greater satisfaction in these couples rather than specific interactional properties of the relationship. Because the difference between the highest and lowest group was only two years and since almost all persons had some post-secondary education, this explanation seems unlikely. Nevertheless, research is needed in which either the level of couple adjustment or education is held constant. The couples participating in this study were all relatively well adjusted and were recruited from the same population. The relationship found between marital adjustment and patterns of emotional communication therefore may not generalize to more seriously distressed couples.

Couples in the current study were all assessed one month after their first baby was born. The effect of this exciting yet demanding life event on couple communication may be quite profound. Life cycle research thus far, however, has been inconclusive in showing effects specifically related to the birth of the first child (Schram, 1979; Nock, 1979, 1981). Replication of the current study with couples in other stages of the life cycle would aid in generalizing these findings.

The apparent avoidance of specifics by moderately adjusted couples together with their apparent use of coercive control techniques may conceivably lead to more serious problems for the marriage. Data from Markman's (1979) longitudinal study indicated that negative interaction patterns predate marital dissatisfaction. Additional longitudinal studies are needed to clarify the etiology of marital distress.

As with all laboratory findings, the question of generalizability to naturalistic environments can be raised. Mettetal and Gottman (1980) found some generalizability of behavior sequencing when asking couples to discuss a relationship problem at home or in the laboratory setting. Because of the many differences between that study and the current one however, generalization to the home environment is still uncertain. Future investigators would do well to consider more unobtrusive methods of home data collection such as that employed by Christensen (1979) in order to decrease couples' reactivity to being observed.

Confirmation of the emotional behavior patterns suggested by the current study is needed. The findings appear to support numerous intervention programs which have attempted to teach skills in emotional expression and active listening to couples (Ely, et al., 1973; D'Augelli, et al., 1974; Rappaport, 1976). Although those studies showed that training increases self-reported marital satisfaction, further use of observational outcome methods are needed to assess the extent and conditions under which couples implement these skills in their relationships.

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TABLE 1

Sequential Analysis of Focused Complaint (FC) and Vague Complaint (VC) Given Partner Legitimize/Empathize (LE) for Total Sample

	LAG					
	1[a]	2	3	4	5	6
p(FC | LE)	.067	.063	.058	.035	.060	.050
p(FC)	.049	.046	.046	.046	.046	.046
z	5.60**	5.16**	3.82**	-3.65**	4.37**	1.28
p(VC | LE)	.057	.058	.053	.025	.045	.025
p(VC)	.053	.050	.050	.050	.050	.050
z	1.28	2.26*	0.95	-7.76**	-1.60	-7.65**

Note: Conditional probabilities of initiator behaviors (FC or VC) given respondent behavior (LE).

[a]adjusted for the impossibility of respondent LE following itself

*$p < .05$

**$p < .01$

TABLE 2

Sequential Analysis of Focused Complaint (FC) and Vague Complaint (VC) Given Partner Negative Behavior (NB) for Total Sample

	LAG					
	1[a]	2	3	4	5	6
p(FC | NB)	.046	.038	.026	.030	.031	.027
p(FC)	.049	.046	.046	.046	.046	.046
z	-1.03	-2.60**	-6.54**	-5.03**	-4.82**	-5.95**
p(VC | NB)	.058	.013	.060	.035	.027	.023
p(VC)	.053	.050	.050	.050	.050	.050
z	1.42	-11.44**	2.83**	-4.76**	-7.22**	-8.35**

Note: Conditional probabilities of initiator behaviors (FC or VC) given respondent behavior (NB).

[a]adjusted for the impossibility of respondent NB following itself.

**$p < .01$

TABLE 3

Lag One Probabilities of Legitimize/Empathize(LE) and Negative Behavior (NB) Given Focused Complaint(FC) or Vague Complaint(VC) for Couples with Varying Adjustment

Marital Adjustment	LE | FC	LE | VC	NB | FC	NB | VC
Moderate				
Conditional p	.088	.162	.147	.108
Unconditional p	(.041)	(.042)	(.081)	(.082)
z	8.83**	22.73**	9.03**	3.62**
High				
Conditional p	.130	.182	.076	.136
Unconditional p	(.083)	(.083)	(.064)	(.064)
z	6.84**	14.30**	1.92	11.74**
Very High				
Conditional p	.190	.103	.024	.052
Unconditional p	(.025)	(.025)	(.042)	(.047)
z	39.98**	18.79**	-3.53**	0.91

Note: Lag one probabilities of respondent behavior (LE or NB) given initiator behavior (FC or VC) are adjusted for the impossibility of a behavior following itself.

**$p < .001$

TABLE 4

Lag One Probabilities of Focused Complaint(FC) and Vague Complaint(VC) Given Legitimize/Empathize(LE) Negative Behavior (NB)for Couples with Varying Adjustment

Marital Adjustment	FC | LE	VC | LE	FC | NB	VC | NB
Moderate				
Conditional p	.055	.073	.031	.063
Unconditional p	(.051)	(.054)	(.053)	(.057)
z	0.67	3.07*	-3.62**	0.97
High				
Conditional p	.074	.057	.081	.093
Unconditional p	(.064)	(.061)	(.062)	(.060)
z	1.66	-0.58	3.12*	5.60**
Very High				
Conditional p	.061	.030	.017	.000
Unconditional p	(.031)	(.043)	(.031)	(.044)
z	6.58**	-2.33	-3.01*	-8.04**

Note: Lag one probabilities of initiator behavior (FC or VC) given respondent behavior (LE or NB) are adjusted for the impossibility of a behavior following itself.

*$p < .01$

**$p < .001$